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PTO/SB/05 (08-00)

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U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Please type a plus sign (+) inside this box  Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number**UTILITY
PATENT APPLICATION
TRANSMITTAL**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	00-11-1450
First Inventor	Kil Yong SUNG
Title	Child-Resistant Utility Lig
Express Mail Label No.	EL100937568US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO:Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
 2. ☒ Applicant claims small entity status.
See 37 CFR 1.27.
 3. ☒ Specification [Total Pages (preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
 4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets - 5. Oath or Declaration [Total Pages - a. ☐ Newly executed (original or copy)
 - b. ☒ Copy from a prior application (37 CFR 1.63 (d))
(for continuation/divisional with Box 17 completed)
 - i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)
6. ☐ Application Data Sheet. See 37 CFR 1.76

7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)
8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - a. ☐ Computer Readable Form (CRF)
 - b. Specification Sequence Listing on:
 - i. ☐ CD-ROM or CD-R (2 copies); or
 - ii. ☐ paper
 - c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☐ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) ☐ Power of Attorney
11. ☐ English Translation Document (if applicable)
12. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
13. ☒ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Other:

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP)of prior application No. 09, 507,100

Prior application information

Examiner David LeeGroup I Art Unit. 3743For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.**18. CORRESPONDENCE ADDRESS**☒ Customer Number or Bar Code Labelor ☐ Correspondence address below

Name

23388

Address

PATENT TRADEMARK OFFICE

City

State

Zip Code

Country

Telephone

Fax

Name (Print/Type)

R. JOSEPH TROJAN

Registration No. (Attorney/Agent)

34,264

Signature

Date

11/17/2000

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FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$ 355.00)

Complete if Known

Application Number	
Filing Date	
First Named Inventor	SUNG, Kil Yong
Examiner Name	
Group Art Unit	
Attorney Docket No.	00-11-1450

METHOD OF PAYMENT

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

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Number

500703

Deposit
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- ☒ Charge Any Additional Fee Required
Under 37 CFR 1.16 and 1.17

- ☒ Applicant claims small entity status
See 37 CFR 1.27

2. ☒ Payment Enclosed:

☒ Check ☐ Credit card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
101	710	201	355	Utility filing fee	355
106	320	206	160	Design filing fee	
107	490	207	245	Plant filing fee	
108	710	208	355	Reissue filing fee	
114	150	214	75	Provisional filing fee	

SUBTOTAL (1) (\$ 355)

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
2	-20** = 0	0	0
2	-3** = 0	0	0
Multiple Dependent			

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
103	18	203	9	Claims in excess of 20
102	80	202	40	Independent claims in excess of 3
104	270	204	135	Multiple dependent claim, if not paid
109	80	209	40	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2)

(\$ 0)

**or number previously paid, if greater, For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Fee Code	Large Entity Fee (\$)	Small Entity Fee Code	Small Entity Fee (\$)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for ex parte reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	390	216	195	Extension for reply within second month	
117	890	217	445	Extension for reply within third month	
118	1,390	218	695	Extension for reply within fourth month	
128	1,890	228	945	Extension for reply within fifth month	
119	310	219	155	Notice of Appeal	
120	310	220	155	Filing a brief in support of an appeal	
121	270	221	135	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,240	241	620	Petition to revive - unintentional	
142	1,240	242	620	Utility issue fee (or reissue)	
143	440	243	220	Design issue fee	
144	600	244	300	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	130	123	130	Petitions related to provisional applications	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))	
179	710	279	355	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)

SUBMITTED BY

Name (Print/Type) R. JOSEPH TROJAN

Registration No.
(Attorney/Agent)

34,264

Complete (if applicable)

Telephone (310) 777-8399

Signature

Date

11/17/2000

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Patent, Trademark, Copyright
Trade Secret & Related Causes

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November 17, 2000

Commissioner for Patents
Box PATENT APPLICATION - FEE
Washington, D.C. 20231

VIA U.S. EXPRESS MAIL (EL100937568US)

Re: Continuing U.S. Patent Application for "Child-Resistant Utility Lighter" based on Serial No. 09/507,100 (filed on 02/17/2000);
Inventor: SUNG, Kil Yong
Serial No.: Not assigned; Filing Date: Not assigned.
Attorney Docket No. 00-11-1450

Dear Sir/Madam:

Please find enclosed the following documents for a continuing application from U.S. Patent Application No. 09/507,100:

1. Preliminary Amendment and request for Interference (21 pages);
2. Copy of U.S. Patent Application No. 09/507,100, including Declaration for Inventor(s) and Drawings (26 pages + 1 page for Declaration + 1 page for Drawings);
3. Utility Patent Application Transmittal (1 page);
4. Fee Transmittal for FY2001 (1 page, 1 copy);
5. Certificate of Mailing by Express Mail (1 page);
6. A check for \$355 (1 page);
7. A Return Post Card (1 page);
8. A cover letter (1 page);

If the fees includes are not sufficient to obtain a filing date, please deduct the appropriate fee amount from our Deposit Account No. 500703.

Very truly yours,

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by

A handwritten signature in black ink, appearing to read "Lee F. Sharra".

Lee F. Sharra
Reg. No. 43,108

LFS:lfs
Enclosures
cc: Calico Brands, Inc.

CERTIFICATE OF MAILING BY EXPRESS MAIL
PURSUANT TO 37 C.F.R. 1.10

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09/716573
11/17/00

I hereby certify that I have enclosed the following:

1. Preliminary Amendment and request for Interference (21 pages);
2. Copy of U.S. Patent Application No. 09/507,100, including Declaration for Inventor(s) and Drawings (26 pages + 1 page for Declaration + 1 page for Drawings);
3. Utility Patent Application Transmittal (1 page);
4. Fee Transmittal for FY2001 (1 page, 1 copy);
5. Certificate of Mailing by Express Mail (1 page);
6. A check for \$355 (1 page);
7. A Return Post Card (1 page);
8. A cover letter (1 page);

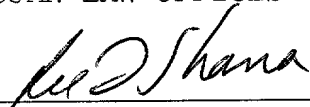
is being deposited with the U.S. Postal Service by me personally as Express Mail No. EL100937568US in an envelope addressed to:

Box PATENT APPLICATION - FEE
Commissioner for Patents
Washington, D.C. 20231

on November 17, 2000,

Continuing U.S. Patent Application for "Child-Resistant Utility Lighter" based on U.S. Patent Application Serial No. 09/507,100 (filed on 02/17/2000);
Inventor: SUNG, Kil Yong
Attorney Docket No. 00-11-1450
Serial No.: Not assigned; Filing Date: Not assigned.

TROJAN LAW OFFICES
by



Lee F. Sharra, Reg. No. 43,108

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application)	Primary Examiner:
of Kil Yong Sung)	
)	
)	Group Art Unit:
)	
Serial No. 09/507,100)	
)	Attorney File No.: 00-11-1450
Filed: February 17, 2000)	
)	
CHILD-RESISTANT UTILITY)	
LIGHTER)	
)	
)	

PRELIMINARY AMENDMENT AND REQUEST FOR INTERFERENCE

Hon. Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

Applicant hereby submits the following preliminary amendment to
the specification submitted and requests consideration.

AMENDMENT

Specification:

Applicant hereby requests insertion of the following at the
beginning of the original specification, "This application is a
continuing application of Non-Provisional U.S. Patent Application No.
09/507,100, filed February 17, 2000, which in turn claims priority to a
Provisional U.S. Patent Application Serial No. 60/126,326, filed March
26, 1999."

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Claims:

Applicant hereby requests cancellation of original claims 1 through 15.

5 Please add the following claims:

16. A lighter comprising:

a lighter housing,

a fuel tank, located within the lighter housing, for holding the fuel,

10 a piezoelectric unit for creating a spark,

a trigger, slidably mounted in the lighter housing, for activating the piezoelectric unit, the trigger having a stopper tab,

a fuel-release valve being spring loaded so as to be urged into the closed position,

15 a spring mechanism having a nonoperational position, an operational position, a first portion and a second portion, the first portion locks the trigger when the spring mechanism is in the nonoperational position, the second portion opens the fuel-release valve when the spring mechanism is in the operational position, the spring mechanism being urged into the nonoperational position, and

20 a safety button for moving the spring mechanism from the nonoperational position to the operational position.

25

17. A lighter comprising:

a lighter housing,

a fuel tank, located within said lighter housing for

holding fuel,

a piezoelectric unit for creating a spark,

a trigger, slidably mounted in the lighter housing for
activating the piezoelectric unit, said trigger having a
stopper tab,

a fuel-release valve being spring-loaded so as to be
urged into the closed position,

a spring mechanism having a non-operational position, an
operational position, a first portion and a second portion,
said first portion locks said trigger by interfering with
said stopper tab when said spring mechanism is in the non-
operational position, said second portion opens said fuel-
release valve when said spring mechanism is in said
operational position, said spring mechanism being biased into
said non-operational position, and

a safety button for moving said spring mechanism from
said non-operational position to said operational position by
moving said first portion of the spring mechanism out of
interference with said trigger to allow depression of said
trigger and activation of said piezoelectric unit.

REMARKS

Applicant has added two new claims to the application. No new
matter has been introduced through these amendments.

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REQUEST FOR INTERFERENCE

Applicant is aware of United States Patent Number 6,050,810 issued to Huang on April 18, 2000 and filed on March 22, 1999 that defines the same patentable subject matter contained in Applicant's patent application. Because of this, Applicant requests an interference under 37 C.F.R. §1.607. Huang's patent issued April 18, 2000, and this request for interference is within one year from the date of issuance as required by 35 USC §135(b). Applicant's application claims priority to the non-provisional U.S. Patent Application Serial No. 09/507,100, filed 02/17/2000, which in turn claims priority to a provisional U.S. Patent Application Serial No. 60/126,326, filed March 26, 1999. The effective filing dates of the Huang patent and Applicant's provisional application are within the statutory three months of each other (and in actuality these dates are within 4 days of each other). 37 CFR §1.608(a). Applicant's invention was conceived and reduced to practice in the United States of America before the United States filing date of the Huang patent. Huang, who is a Taiwanese citizen and who invented in Taiwan, does not have any right to claim a date earlier than that of his United States filing date. 35 USC §104.

EXPLANATION OF INVENTION

Applicant's Continuing Application and Preliminary Amendment and the Huang '810 patent have the same subject matter and are not patentably distinct. The invention is a lighter with a child-safety protection mechanism preventing accidental activation. The invention includes a safety button that activates the fuel flow and releases the safety mechanism allowing the trigger to be pressed causing the

igniting device to ignite the fuel and thereby produce flame. The safety button has an external end and an internal end, the internal end pushes against a cam mechanism that has arms or levers. With the safety mechanism engaged, one arm of the cam mechanism acts against the trigger blocking the trigger's movement. By activating the safety button, the fuel is released and the safety button acts against an arm of the cam mechanism disengaging the safety mechanism by releasing the trigger lock and allowing the trigger to be depressed to activate the igniting device.

Although named differently by the two inventors, both the Huang '810 patent and Applicant's application have the same inventive features. They both contain a safety button that performs the same function of releasing the fuel while simultaneously activating the cam mechanism when moved from the non-operational to the operational position. Huang calls the safety button a "Knob" and Applicant refers to the safety button as a "Safety Button."

Both inventions contain the cam mechanism. The cam mechanism acts against the trigger preventing it from being depressed. This unit is called a "latch" in the Huang '810 patent. Huang's "latch" is made up of a pivot shaft having a unit with an arm and a limb, which has a hook to block the trigger. Applicant's cam mechanism has a cam support pin that corresponds with Huang's pivot shaft. Applicant's cam mechanism also has a fuel release lever, a cam lever, and a return spring as a part of its structure.

Huang has a spring biased against the safety button or Knob to close off the fuel supply when the Knob is not activated. Applicant has a return spring biased to return the fuel release lever to the non-operational position when the safety button is not activated.

Applicant's cam mechanism has a cam lever that acts against a stopper tab on the trigger preventing it from being activated. Huang's "latch" has a limb with a "hook to block trigger" that engages with the back of the trigger preventing the trigger from being activated.

5 Although the "stopper tab" and the "latch area" are located in different places on the trigger body, they perform the exact same function in the exact same manner, namely both prevent the trigger from being activated.

Applicant's "cam lever" engages with an appendage located on the trigger preventing activation of the trigger. This "cam lever" performs the same function as Huang's "limb" with "hook to block trigger." These elements have a slightly different appearance, but both have the exact same function of preventing the activation of the trigger by engaging with an appendage located on the trigger. This appendage is called a "stopper tab" by Applicant. In Huang's '810 patent, this area at the back of the trigger is unlabeled but is shown in drawings.

THE COUNT

Applicant proposes the following Count for the interference. This Count defines the invention claimed in both the '810 patent and Applicant's application:

A lighter comprising:

a lighter housing,
a fuel tank located within the lighter housing,
a fuel ignition unit,
a trigger for activating the ignition unit to create a

spark, the trigger being slidably mounted in the lighter housing,

a fuel-release valve,

a spring that engages the fuel release valve to bias the valve in a closed position,

a latch having a normal position that is biased to interfere with the path of said trigger for impeding depression of the trigger,

a release lever having an external end outside of said housing for manipulation by the user from a non-operational to an operational lighting position,

said release lever extending into said housing to engage said latch such that when said external end of said release lever is manipulated by the user, said release lever causes said latch to move out of interference with said trigger to permit depression of said trigger,

said release lever also capable of engaging said fuel release valve such that manipulation of said external end of said release lever causes said valve to move to an open position at the same time that said release lever moves said latch out of interference with said trigger, and,

said release lever biased to automatically return to its non-operational lighting position after manipulation by the user.

APPLICANT'S CONTINUING APPLICATION CLAIMS

Applicant's independent claims 16 and 17 read upon the above Count. Please see the chart below to see a direct claim by claim

comparison. The Applicant's claims that read on the count are:

16. A lighter comprising:

a lighter housing,

a fuel tank, located within the lighter housing for
5 holding the fuel,

a piezoelectric unit for creating a spark,

a trigger, slidably mounted in the lighter housing for
activating the piezoelectric unit, the trigger having a
stopper tab,

10 a fuel-release valve being spring loaded so as to be
urged into the closed position,

a spring mechanism having a non-operational position,
an operational position, a first portion and a second
portion, the first portion locks the trigger when the spring
15 mechanism is in the non-operational position, the second
portion opens the fuel-release valve when the spring
mechanism is in the operational position, the spring
mechanism being urged into the non-operational position, and

a safety button for moving the spring mechanism from
20 the non-operational position to the operational position.

17. A lighter comprising:

a lighter housing,

a fuel tank, located within said lighter housing for
25 holding fuel,

a piezoelectric unit for creating a spark,

a trigger, slidably mounted in the lighter housing for
activating the piezoelectric unit, said trigger having a

stopper tab,

a fuel-release valve being spring-loaded so as to be urged into the closed position,

5 a spring mechanism having a non-operational position, an operational position, a first portion and a second portion, said first portion locks said trigger by interfering with said stopper tab when said spring mechanism is in the non-operational position, said second portion opens said fuel-release valve when said spring mechanism is in said operational position, said spring mechanism being biased into said non-operational position, and

10 a safety button for moving said spring mechanism from said non-operational position to said operational position by moving said first portion of the spring mechanism out of interference with said trigger to allow depression of said trigger and activation of said piezoelectric unit.

HUANG '810 PATENT CLAIMS

20 Independent Claims 1 and 6 in the Huang '810 patent read on the proposed count. Huang's claims 3-5 and 7-9 depend on independent claims 1 and 6 and only limit the claims by adding additional limitations and do not serve to distinguish the patentable invention. Please see the chart below to see a direct claim by claim comparison. Huang's claims 1-9 read as follows:

25 1. A lighter comprising:

a housing including a valve seat provided therein,
a container received in said housing for receiving gas,
an igniting device received in said housing,

a trigger slidably received in said housing for engaging with and for actuating said igniting device,

a plug slidably received in said housing and including an aperture formed therein,

5 means for biasing said plug to engage with said valve seat and to prevent the gas from flowing into said aperture of said plug,

the gas being allowed to flow into said aperture of said plug when said plug is moved against said biasing means,

10 a latch pivotally secured in said housing and including a hook for engaging with said trigger and for preventing said trigger from being actuated, and

a knob slidably received in said housing and engaged with said plug for disengaging said plug from said valve seat, said knob being engaged with said latch for disengaging said hook of said latch from said trigger when said knob is moved relative to said housing.

2. The lighter according to claim 1, wherein said housing
20 includes a tube slidably received therein and a sleeve fixed to said tube, said plug includes a front end secured in said tube and includes a rear end for engaging with said tube, said knob includes an orifice formed therein for slidably receiving said sleeve, said sleeve includes a projection for
25 engaging with said tube and for moving said tube and said plug to disengage said plug from said valve seat when said sleeve is moved by said knob.

3. The lighter according to claim 2, wherein said plug includes an inlet communicating said aperture of said plug with said valve seat.

5 4. The lighter according to claim 2, wherein said housing includes a bearing secured therein for slidably supporting said tube, said bearing is provided for engaging with said sleeve to limit a relative movement of said sleeve relative to said housing.

10 5. The lighter according to claim 1, wherein said knob includes an extension extended therefrom, said latch includes an arm and a limb extended therefrom, and includes a space formed between said arm and said limb for receiving said extension of said knob and for allowing said knob to act on said latch.

45 6. A lighter comprising:
a housing including a valve seat provided therein,
20 a container received in said housing for receiving gas,
an igniting device received in said housing,
a trigger slidably received in said housing for engaging with and for actuating said igniting device,
a plug slidably received in said housing and including
25 an aperture formed therein,
means for biasing said plug to engage with and to block said valve seat,
the gas being allowed to flow into said aperture of said

plug when said plug is moved against said biasing means,

a tube slidably received in said housing,

a sleeve fixed to said tube, said plug including a front end secured in said tube and including a rear end having a projection for engaging with said tube and for moving said tube and said plug to disengage said plug from said valve seat when said sleeve is moved, and

a knob slidably received in said housing and engaged with said plug for disengaging said plug from said valve seat, said knob including an orifice formed therein for slidably receiving said sleeve, said knob being provided to engage with said tube and said plug and to disengage said plug from said valve seat when said sleeve is moved by said knob,

said housing including a latch pivotally secured therein and having a hook for engaging with said trigger and for preventing said trigger from being actuated, and said knob being engaged with said latch for disengaging said hook of said latch from said trigger when said knob is moved relative to said housing.

7. The lighter according to claim 6, wherein said plug includes an inlet communicating said aperture of said plug with said valve seat.

8. The lighter according to claim 6, wherein said housing includes a bearing secured therein for slidably supporting said tube, said bearing is provided for engaging with said

sleeve to limit a relative movement of said sleeve relative to said housing.

9. The lighter according to claim 6, wherein said knob includes an extension extended therefrom, said latch includes an arm and a limb extended therefrom, and includes a space formed between said arm and said limb for receiving said extension of said knob and for allowing said knob to act on said latch.

COMPARING CLAIMS CORRESPONDING TO PROPOSED COUNT

Applicant has proposed the Count that embodies the invention in question and upon which Huang's independent claims 1 and 6 and depending claim 2 read, as well as Applicant's claims 16 and 17 read. A comparison of the count with the Huang's claims and Applicant's claims reveals the same patentable subject matter. Since the same patentable subject matter is in question and is claimed by two non-related parties, an Interference must be declared. The following is a line by line comparison of the claims with the Count. The information taken from Huang's and Applicant's claims may not appear in the same order as within the original claims; however, this is done for comparison purposes. All aspects of the Count are explicitly or implicitly included in Huang's and Applicant's claims.

Count line 2 calls for a "lighter housing." This sets out the basic body for a utility lighter, and each of Huang's claims 1 and 6 and Applicant claims 16 and 17 include a lighter housing.

Count line 3 calls for a fuel tank located within the lighter

housing. Huang's claims 1 and 6 and Applicant claims 16 and 17 include the fuel tank.

Count line 4 calls for a fuel ignition unit. Huang includes the igniting device in both claims 1 and 6, as does Applicant in claims 16 and 17.

Count line 5 calls for a trigger for activating the ignition unit. The trigger is present in both Huang's and Applicant's claims and is used for the identical purpose of activating an igniting device to create a spark.

Count line 7 calls for a fuel-release valve. Huang claims 1 and 6 refer to the fuel release valve as a "plug slidably received in said housing." This plug makes up the fuel release valve in Huang's patent. Applicant refers alternatively in claim 16 to a valve and in claim 17 to a fuel-release valve.

Count line 8 calls for "a spring that engages the fuel release valve to bias the valve in a closed position." Huang claims 1 and 6 include this same element with the same function but describes it in its active state: "the gas being allowed to flow into said aperture of said plug when said plug is moved against said biasing means." In Applicant claims 16 and 17, Applicant refers to the "fuel-release valve being spring loaded so as to be urged into the closed position." Again, the fuel-release valve is biased to the closed position until activated for opening.

Count line 10 calls for a "latch having a normal position that is biased to interfere with the path of the trigger for impeding depression of the trigger." Huang's claim 1 and claim 6 include such an element called a "latch that is pivotally secured in said housing and including a hook for engaging with said trigger and for preventing said trigger

from being actuated." The Huang element has the exact same utility as the latch in the Count. Applicant's claims 16 and 17 also include the same element. In Applicant claims 16 and 17, Applicant refers to this element as a "spring mechanism having a non-operational position, an operational position, a first portion and a second portion, the first portion locks the trigger when the spring mechanism is in the non-operational position." This has the same utility as the corresponding latch in the Count.

Count line 12 calls for a "release lever having an external end outside of said housing for manipulation by the user from an non-operational to an operational lighting position," further having an end that extends into the housing to engage with the latch so that the latch moves out of interference with the trigger. Both Huang claims 1 and 6 have this element but refer to it as a Knob. The "knob is slidably received in said housing and engaged with said plug for disengaging said plug from said valve seat, said knob being engaged with said latch for disengaging said hook of said latch from said trigger." This states the activation of the "Knob" from its non-operational to its operational position will remove the trigger interference allowing the trigger to be depressed. Applicant's claims 16 and 17 also include the "safety button for moving the spring mechanism from the non-operational to the operational position" thereby removing the trigger interference and allowing the trigger to be depressed.

Count line 19 calls for a "release lever also capable of engaging said fuel release valve such that manipulation of said external end of said release lever moves said latch out of interference with said trigger. This knob/button is described in Huang claims 1 and 6 in "a knob slidably received in said housing and engaged with said plug for

disengaging said plug from said valve seat, said knob being engaged with said latch for disengaging said hook of said latch from said trigger when said knob is moved relative to said housing." Applicant also has language which refers to this knob/button and its same purpose. Within
5 the context of Applicant claims 16 and 17, the phrase "a safety button for moving the spring mechanism from the non-operational to the operational position" embodies this same element.

Count line 23 calls for "said release lever biased to automatically return to its non-operational lighting position after
10 manipulation by the user." Huang includes this function in claim 1 by describing the "means for biasing said plug to engage with said valve seat and to prevent the gas from flowing into said aperture of said plug." In claim 6, Huang is a little more direct as to the function of a "means for biasing said plug to engage with and to block said valve
15 seat." This biasing means performs the same function of returning the safety device to its non-operational position. Applicant counts 16 and 17 also include this aspect of the invention with the words the "spring mechanism being urged into the non-operational position."

The following chart depicts the Huang '810 independent claims 1
20 and 6 and Applicant's claims 16 and 17 against the claims of the Count. This chart takes each element of the count and matches it against the similar distinct elements contained in the Huang '810 claims 1 and 6 and Applicant's claims. Huang's dependent claims 3-5 and 7-9 are not included in the chart as they only further to narrow the invention and
25 do not address the core of the patentably distinct material in question in the Count.

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CHART COMPARING CLAIMS CORRESPONDING TO COUNT

	PROPOSED COUNT	HUANG CLAIM 1	HUANG CLAIM 6	APPLICANT CLAIM 1	APPLICANT CLAIM 2
1	A lighter comprising: a lighter housing,	A lighter comprising: a housing including a valve seat provided therein,	A lighter comprising: a housing including a valve seat provided therein,	A lighter comprising: a lighter housing,	A lighter comprising a lighter housing,
2	a fuel tank located within the lighter housing,	a container received in said housing for receiving gas,	a container received in said housing for receiving gas,	a fuel tank, located within the lighter housing for holding the fuel,	a fuel tank, located within said lighter housing for holding fuel,
3	and a fuel ignition unit,	an igniting device received in said housing,	an igniting device received in said housing,	a piezoelectric unit for creating a spark,	and a piezoelectric unit for creating a spark,
4	a trigger for activating the ignition unit to create a spark, the trigger being slidably mounted in the lighter housing,	a trigger slidably received in said housing for engaging with and for actuating said igniting device,	a trigger slidably received in said housing for engaging with and for actuating said igniting device,	a trigger, slidably mounted in the lighter housing, for activating the piezoelectric unit, the trigger having a stopper tab,	a trigger, slidably mounted in the lighter housing, for activating the piezoelectric unit, said trigger having a stopper tab,
5	a fuel-release valve,	a plug slidably received in said housing and including an aperture formed therein,	a plug slidably received in said housing and including an aperture formed therein,	a fuel-release valve being spring-loaded so as to be urged into a closed position,	a fuel-release valve being spring-loaded so as to be urged into a closed position,
6	a spring that engages the fuel release valve to bias the valve in a closed position,	the gas being allowed to flow into said aperture of said plug when said plug is moved against said biasing means,	the gas being allowed to flow into said aperture of said plug when said plug is moved against said biasing means,	a fuel-release valve being spring-loaded so as to be urged into the closed position;	a fuel-release valve being spring-loaded so as to be urged into the closed position;
7	a latch having a normal position that is biased to interfere with the path of said trigger for impeding depression of the trigger,	a latch pivotally secured in said housing and including a hook for engaging with said trigger and for preventing said trigger from being actuated, and	said housing including a latch pivotally secured therein and having a hook for engaging with said trigger and for preventing said trigger from being actuated, and said knob being engaged with said latch for disengaging said hook of said latch from said trigger when said knob is moved relative to said housing.	a spring mechanism having a non-operational position, an operational position, a first portion and a second portion, the first portion locks the trigger when the spring mechanism is in the non-operational position, the second portion opens the fuel-release valve when the spring mechanism is in the operational position, the spring mechanism being urged into the non-operational position, and	a spring mechanism having a non-operational position, an operational position, a first portion and a second portion, said first portion locks said trigger by interfering with said stopper tab when said spring mechanism is in the non-operational position, said second portion opens said fuel-release valve when said spring mechanism is in said operational position, said spring mechanism being biased into said non-operational position; and

CHART COMPARING CLAIMS CORRESPONDING TO COUNT

	PROPOSED COUNT	HUANG CLAIM 1	HUANG CLAIM 6	APPLICANT CLAIM 1	APPLICANT CLAIM 2
8	a release lever having an external end outside of said housing for manipulation by the user from a non-operational to an operational lighting position, said release lever extending into said housing to engage said latch such that when said external end of said release lever is manipulated by the user, said release lever causes said latch to move out of interference with said trigger to permit depression of said trigger;	a knob slidably received in said housing and engaged with said plug for disengaging said plug from said valve seat, said knob being engaged with said latch for disengaging said hook of said latch from said trigger when said knob is moved relative to said housing.	a knob slidably received in said housing and engaged with said plug for disengaging said plug from said valve seat, said knob including an orifice formed therein for slidably receiving said sleeve, and to disengage said plug from said valve seat when said sleeve is moved by said knob,	a safety button for moving the spring mechanism from the non-operational position to the operational position.	a safety button for moving said spring mechanism from said non-operational position to said operational position by moving said first portion of the spring mechanism out of interference with said trigger to allow depression of said trigger and activation of said piezoelectric unit.
9	said release lever also capable of engaging said fuel release valve such that manipulation of said external end of said release lever causes said valve to move to an open position at the same time that said release lever moves said latch out of interference with said trigger, and,	a knob slidably received in said housing and engaged with said plug for disengaging said plug from said valve seat, said knob being engaged with said latch for disengaging said hook of said latch from said trigger when said knob is moved relative to said housing.	a knob slidably received in said housing and engaged with said plug for disengaging said plug from said valve seat, said knob including an orifice formed therein for slidably receiving said sleeve, said knob being provided to engage with said tube and said plug and to disengage said plug from said valve seat when said sleeve is moved by said knob,	a spring mechanism having a non-operational position, an operational position, a first portion and a second portion, the first portion locks the trigger when the spring mechanism is in the non-operational position, the second portion opens the fuel-release valve when the spring mechanism is in the operational position, the spring mechanism being urged into the non-operational position, and a safety button for moving the spring mechanism from the non-operational position to the operational position.	a spring mechanism having a non-operational position, an operational position, a first portion and a second portion, said first portion locks said trigger by interfering with said stopper tab when said spring mechanism is in the non-operational position, said second portion opens said fuel-release valve when said spring mechanism is in said operational position, said spring mechanism being biased into said non-operational position, and a safety button for moving said spring mechanism from said non-operational position to said operational position by moving said first portion of the spring mechanism out of interference with said trigger to allow depression of said trigger and activation of said piezoelectric unit.

CHART COMPARING CLAIMS CORRESPONDING TO COUNT

PROPOSED COUNT	HUANG CLAIM 1	HUANG CLAIM 6	APPLICANT CLAIM 1	APPLICANT CLAIM 2
10 said release lever biased to automatically return to its non-operational latching position after manipulation by the user	means for biasing said plug to engage with said valve seat and to prevent the gas from flowing into said aperture of said plug,	means for biasing said plug to engage with and to block said valve seat,	a spring mechanism having a non-operational position, a first portion and a second portion, the first portion locks the trigger when the spring mechanism is in the non-operational position, the second portion opens the fuel-release valve when the spring mechanism is in the operational position, the spring mechanism being urged into the non-operational position, and	a spring mechanism having a non-operational position, an operational position, a first portion and a second portion, said first portion locks said trigger by interfering with said stopper tab when said spring mechanism is in the non-operational position, said second portion opens said fuel-release valve when said spring mechanism is in said operational position, said spring mechanism being biased into said non-operational position, and

DEPENDING CLAIMS NOT COMPARED TO COUNT BECAUSE THEY

ONLY SERVE TO LIMIT THE INVENTION

Huang's claims 2-5 depend from claim 1. Huang's claims 7-9 depend from claim 6. These dependent claims are not patentably distinct from the count and therefore while not identical to the Count, correspond substantially to the Count. For this reason, the dependent claims must be included in the interference. See 35 CFR §1.601(f). The dependent claims only serve as limitations to the invention and do not present inventive matter. Huang's dependent claims are discussed as follows.

Huang claim 2 depends on claim 1 and serves to instruct by defining limitations to the invention that are included within the prior art. Huang claim 3 depends on claim 2 and serves only to instruct that the plug has an inlet for communicating with the valve seat, a limitation on the patentable invention that exists in the prior art. Claim 4 depends on claim 2 and serves only to instruct that the tube contained in claim 2 can be secured with a bearing. Claim 5 depends on claim 1 and serves only to describe the action of the Knob on the latch.

Huang's claim 7 depends on claim 6 and serves only to instruct that the plug has an inlet for communicating with the valve seat, a limitation on the patentable invention that exists in the prior art. Claim 8 depends on claim 6 and serves only to instruct that the tube contained in claim 6 can be secured with a bearing. Claim 9 depends on claim 6 and serves only to describe the action of the Knob on the latch.

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CONCLUSION

Applicant requests that Examiner add the above requested claims to Applicant's continuing application. Further, Applicant requests this interference because of identical nature of the subject matter of both Applicant's application and the Huang '810 patent and because of the non-common ownership of the applications involved. Applicant's application is based on provisional application Serial No. 60/126,326 filed March 26, 1999. The Huang patent was filed March 22, 1999.

Respectfully Submitted,
TROJAN LAW OFFICES

Dated: November 17, 2000

By

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CHILD-RESISTANT UTILITY LIGHTER

Inventor: Kil Yong Sung

RELATED PATENT APPLICATIONS

This application claims priority to a provisional application Serial No. 60/126,326, filed March 26, 1999.

BACKGROUND OF INVENTION

1. FIELD OF INVENTION:

This invention relates to a utility lighter which contains a safety feature incorporating a cam mechanism and a safety button, wherein normal operation of the lighter through depression of the trigger is impeded by the safety feature, and wherein operation of both the safety button and the trigger will produce a flame.

2. BACKGROUND ART:

Utility lighters are very useful and have become quite prevalent in modern times. Utility lighters of the type described herein generally contain a handle and an elongated lighting rod. The shape and operation of utility lighters allow for several advantages over normal means of producing a flame. Most significantly, due to the elongated nature of the lighting rod, utility lighters enable the operator to stand a safe distance away from the object to be ignited before actuating the lighter, thus

avoiding a large number of potential accidents. In addition, utility lighters allow a flame to be produced in hard-to-reach or narrow places, where the human hand holding a match would not normally fit. Still, in the hands of children, or others who do not know how to safely and properly operate the lighter, such lighters are as dangerous as any other spark and/or flame-producing device. Therefore, a need has been realized to equip utility lighters with safety features that minimize accidental or improper use by inexperienced persons, especially young children.

Many inventions have been created to address this safety-related concern. Generally, these inventions have sought to introduce safety mechanisms that disable automatic operation of either the spark-generation and/or the fuel-release function of the lighter. For example, some utility lighters provide for a blocking mechanism, where the actuating trigger is blocked from moving the required distance for a spark to be generated. In these lighters, the locking mechanism is normally de-activated by sliding an "on/off" switch to the "on" position, or by other means, so as to remove the impediment from the actuating trigger's operating path.

Although utility lighters of the type described above provide some level of safety, there is much room for improvement. Specifically, in these lighters, once the locking means (e.g., the on/off switch) is disabled, the lighter remains in the unlocked

state until the locking mechanism is activated again. Therefore, if the operator disables the locking mechanism in order to use the lighter, and then forgets to re-lock the lighter, the safety feature of the lighter is rendered useless, until the locking mechanism is again activated.

Other inventions have attempted to address the safety-related issues by impeding not the operation of the trigger, but that of the fuel-release mechanism. Of course, a utility lighter containing such a mechanism would inhibit flame generation in the locked position as no fuel would be released until the locking mechanism has been deactivated. However, in these types of lighters, nothing prevents a spark from being generated. As such, the safety goals are only partially met in these types of lighters since young children handling the lighter could still create fires by operating the lighter in close proximity to a source of fuel or near carpets, paper, or other flammable material.

In order to address the above problems, some inventions have introduced locking mechanisms that are activated automatically after each use of the lighter. As such, in these lighters, two states of operation exist: the locked state and the operable state. In the locked state, neither a spark nor a flame can be generated. In contrast, in the operable state, the lighter is no longer locked, so that a flame can be generated. Although, in general, this improvement has alleviated some of the concerns

mentioned above, there is still room for further improvement. Specifically, in most dual-state, automatic-locking lighters, once the lighter is unlocked and the trigger activated, the flame that is generated will subsist for as long as the trigger is held in the depressed position. In other words, once the locking mechanism is disabled, flame generation is a simple task involving depression of the trigger. This is of some concern since even young children might be able to achieve this task.

Therefore, there is a need for a device that not only achieves the stated safety goals in generating a flame, but also makes it difficult for inexperienced users and/or young children to sustain the flame. The invention described herein offers such a combination. The invention requires that a safety button, protruding generally from the top portion of the lighter housing shell, be depressed simultaneously with a trigger before a flame can be produced. In addition, the invention requires that the safety button, and not necessarily the trigger, be held in its activated state in order for the flame to be sustained; releasing the safety button after simultaneous activation of both the safety button and the trigger will cause the flame to be extinguished.

The unique structure of the cam mechanism contained in the present invention provides for an optimum amount of safety as it makes it very difficult, if not impossible, for young children to operate the device. Young children are capable of carrying out

only simple mental concepts. As such, a young child wishing to operate the present invention would attempt to do so in the usual way, i.e., by pressing the trigger. However, due to the automatic locking mechanism of the device, the trigger will not move. This alone will act as a deterrent as most young children will simply abandon the device after several unsuccessful attempts. This is true because a child operator must first recognize that both the trigger and the safety button must be operated simultaneously before a flame can be generated. This is generally too convoluted a concept for young children to grasp or appreciate.

Nevertheless, even if a young child were to be able to learn the proper operation of the device, he or she would probably still be unable to actually operate the device. Given the relative location of the trigger and the safety button, operation of the present invention requires that the user be able to grasp the handle of the lighter in his or her hand, operate the trigger with the index finger, and simultaneously operate the safety button with the thumb. This, in turn, requires not only a significant amount of manual dexterity, but also hands that are sufficiently large, namely, adult hands. Moreover, successful operation of the device requires an amount of strength and pulp that are rarely found in the fingers of young children.

In addition, even if a child were to possess the mental capacity for understanding and learning the required process of

operation, a large enough hand, and the required amount of manual dexterity, strength, and pulp, so that he or she could somehow generate a flame, he or she would have to recognize a second concept: that the flame will not be sustained unless the safety button is held in its activated state. Again, this is a difficult mental concept for a child to recognize and learn. Moreover, even if learned, the concept would be difficult for a child to operationalize given the above discussion regarding the mental and physical limitations of young children. On the other hand, an adult user would have no difficulty operating the invention as the device requires no more than the simultaneous operation of two strategically positioned buttons.

In addition to all of the safety advantages described above, the invention described herein offers a significant reduction in cost, and a significant increase in ease, of manufacturing. The cam mechanism is an integrated, one-piece member that performs the functions of at least three (3) separate members in most other utility lighters currently available on the market. Moreover, the entire safety feature, as well as full operation of the device is generally enabled by the manufacture and use in the lighter of two (1) basic elements: the cam mechanism and the safety button. In addition, it is contemplated that these two elements may even be combined, so that only one integrated structural member need be produced. This, of course, would lead to even more significant savings and simplicity in the manufacturing process.

3. SUMMARY OF THE INVENTION:

The primary object of this invention is to provide a safety mechanism for utility lighters so that children or inexperienced users will be less likely to inadvertently activate the lighter. Such a safety feature is especially important because young children often play with lighters as toys and because lighters have mechanically moveable parts that make them attractive to children as toys.

Another object of the present invention is to prevent the generation of not only a flame, but even a spark. As noted previously, in a lighter where only the fuel-release mechanism is inhibited in the locked state, young children playing with the lighter can still use the lighter to create sparks. Depending on the child's surroundings, this can lead to the start of accidental fires if the child is operating the lighter near paper products or any other source of flammable material.

A further object of the invention described herein is to provide an improved device for maximizing safety in utility lighters without compromising ease of use. To this end, the addition of a safety button creates a simple additional step which, for the intended user, leaves the operation of the utility lighter as simple as it has always been to operate a regular utility lighter with no safety feature, yet, creates an additional

mental step which acts as a deterrent for non-intended users.

Another object of this invention is to reduce the risk of unintended fires, especially by young children, by making it impossible for the flame to continue to burn unless two (2) separate functions are performed simultaneously and operation of a safety button is continued without interruption.

A final object of the present invention is to meet all of its safety goals while, at the same time, it maximizes ease of manufacturing and minimizes costs associated with manufacturing of parts.

The invention meets its objectives by providing a cam mechanism that integrates several structural elements. In the preferred embodiment, the cam mechanism consists of a cam lever, a fuel-release lever, and a return spring. Most significantly from a safety standpoint, the cam mechanism contains a cam lever that acts to lock the trigger in the inoperative position. Typically, a young child will attempt to activate the lighter by depressing the trigger only. However, when this is done, the trigger will not move at all or significantly, so that neither a spark nor a flame will be generated. Since the trigger is locked in this position, repeated operation of the trigger by a child will yield the same unsuccessful results.

The only way to activate the lighter is to depress the safety button. When this is done, the cam lever is moved out of the path of the trigger, so that the trigger can now be depressed.

Depression of the safety button also causes the fuel-release lever to move, so that, depending on the extent of pressure placed on the safety button, the fuel-release valve may be opened and fuel released. As such, a second significant safety-related feature of the present invention is that a small amount of pressure on the safety button will release the trigger lock. However, such pressure will not release sufficient fuel for a flame to be produced. That is, the most that can happen when the user presses the safety button slightly, and then depresses the trigger, is that a spark would be generated. To ignite the spark, the user would have to continue pressing the safety button further than is required to release the lock, so that sufficient fuel is released before the trigger is activated and a spark and flame are generated.

The above procedure ensures that even if a child were to be able to momentarily press the safety button to release the lock, he or she would still have trouble creating a flame, as doing so would require further pressure on the safety button. This is a simple, yet effective concept. Nevertheless, it is a concept that a young child operating the lighter must recognize and grasp before he or she can successfully operate the lighter. In most cases, the child either will not recognize the usefulness of the

safety button or, if he/she does, he/she will not be able to simultaneously press the safety button far enough to create a flame. As such, the child will most likely abandon the lighter after several unsuccessful attempts.

Once the intended operator has pressed the safety button far enough to both unlock the trigger and provide adequate fuel-release, the operator then presses the trigger in order to generate a flame. However, to sustain the flame, the operator must continue to hold the safety button in its activated position. This is a significant departure from lighters that are currently in the market. In most lighters currently in use, once a flame is generated by depressing a trigger, the flame will subsist for as long as the operator continues to hold the trigger in its activated position. In contrast, in the present invention, the cam mechanism allows separation of fuel-release on the one hand, and spark generation on the other, so that spark generation will not necessarily lead to the production of a sustained flame.

It follows that, to successfully operate the present invention, the user must recognize that, once a flame has been generated, it is the safety button, and not the ignition trigger, that must be held in the activated position. This is another procedural step which creates a mental concept that is simple for the adult user to grasp and practice, but difficult for young children to either grasp or practice.

Once the user no longer needs the flame, the safety button is released. At this point, the return spring in the cam mechanism ensures that the cam lever, the fuel-release lever, and the safety button all return to their original stationary positions, thus also automatically re-locking the trigger in the inoperable state.

As can be understood from the above description, the invention disclosed herein achieves its safety objectives without making operation of the lighter any more cumbersome than a regular utility lighter. Specifically, the safety button is positioned in such a way that operation of the lighter is very simple in experienced hands. An adult user familiar with the operation of utility lighters still needs to use only one finger to sustain the flame. This allows the user to operate the lighter in a safe, yet non-complicated manner.

This and other advantages of the present invention will become more apparent through the following description of the drawings and detailed description of the preferred embodiment.

4. BRIEF DESCRIPTION OF THE DRAWINGS:

Fig. 1 is a sectional view showing an embodiment of a child-resistant utility lighter according to the present invention.

5. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT:

A general description of the piezoelectric utility lighter

(1) will be provided before presenting a detailed description of the improvement in the safety feature that constitutes the invention.

Generally, the elements of the utility lighter (1) include a lighter housing (10), a lighting rod attached to the forward end of the lighter housing via engagement means (not shown), a support ring which slides over the overlapping portions of the lighter housing and lighting rod (not shown), a fuel tank (30), a piezoelectric unit (40), a cam-support pin (50), a cam mechanism (60), a fuel-release lever (70), a cam lever (80), a return spring (90), a trigger (100), a stopper (110), and a safety button (120).

The lighter housing (10) is comprised of two shells, cut along the longitudinal axis of the lighter (1). Fig. 1 shows one of these shells. The lighter housing (10) has a back end (10a) and a forward end (not shown), where the forward end is equipped with engagement means (not shown) to engage a lighting rod (not shown). The lighting rod, which typically has a cylindrical cross section, has a free end which constitutes the tip of the lighter (1) and an engagement end which connects to the forward end of the lighter housing. Where the forward end of the lighter housing and the engagement end of the lighting rod overlap, there is provided a support ring (not shown) which slides over and maintains the lighter housing-lighting rod combination.

is a cam mechanism (60). The cam mechanism has a hub (61), as well as three projections that extend in generally different directions. These projections are: a fuel release lever (70), a cam lever (80), and a return spring (90).

The cam mechanism is held in place by a cam-support pin (50). The cam-support pin (50) is a projection that extends from the inner surface of one of the lighter housing shells in a direction that is perpendicular to the longitudinal axis of the lighter (1). The hub (61) of the cam mechanism (60) fits unto and is supported by the cam-support pin (50).

The fuel-release lever (70) has one end (71) that is located between the valve (31) and the flame-adjusting knob (33), and an opposing end that is integral with the hub (61) of the cam mechanism (60).

The cam lever (80) has one end that is integral with the hub (61) of the cam mechanism (60) and an opposing free end that constitutes the cam-lever edge (81). The cam lever (80) also has an upper surface (82), a lower surface (83), and a cavity (84). The cavity (84) houses the safety-button pin (123) of a safety button (120).

The return spring (90) also has one end that is integral with the hub (61) of the cam mechanism (60) and an opposing free end

(91). The return spring (90) further consists of an upper surface (92) and a lower surface (93), where the lower surface (93) rests on a projection (15) that is fixedly attached to the inner surface of one of the lighter housing shells.

The next primary element is the trigger (100). The trigger (100) is slidably mounted between the two shells of the lighter housing (10). As in conventional utility lighters, the trigger (100) is allowed to slide back and forth along the longitudinal axis of the lighter (1). The trigger (100) has an operation section (101) that protrudes from the lighter housing (10) so as to be operated by a finger of the user. Generally, the operation section (101) has a surface that is slightly curved so as to appear concave. However, the invention described herein is amenable to different degrees of curvature for the operation section (101) of the trigger (100).

The trigger (100) also has an undersurface (102) that makes contact with the contact surface (42) of the sliding section (41) of the piezoelectric unit (40). In addition, the trigger (100) is integral with a trigger tab (103) and a stopper tab (110). The trigger tab (103) is a projection that makes contact with the upper surface (82) of the cam lever (80). The stopper tab (110) is typically placed underneath the trigger tab (103) and has a contact edge (111) that engages the cam-lever edge (81).

The next primary element is a safety button (120). The safety button (120) is slidably fitted within the top surface of the lighter housing shell and has an operation section (121) that protrudes from this top surface. The safety button has a lower surface (122) that is integral with a safety-button pin (123), which pin (123) is in contact with the cam lever (80) via the cavity (84) in said cam lever. The safety button (120) is also integral with a set of flanges (124) that can make contact with the inner portion of the top surface of the lighter housing shell, thus limiting the range of motion of the safety button (120).

In the preferred embodiment, the primary elements of the safety-related invention described herein, as well as the interaction between these and the other, more conventional, elements of the utility lighter can be further defined as follows.

In the preferred embodiment, the hub (61) of the cam mechanism (60) is fitted unto and supported by the cam-support pin (50), so that the hub (61) is capable of rotating around the cam-support pin (50). In order to operate the lighter (1), the user must press the trigger (100) to create a spark, and release fuel so that a flame can be generated. However, when the user attempts to press the trigger (100), the trigger will not move significantly or at all.

In the inoperable state, the trigger tab (103) is in contact

with the upper surface (82) of the cam lever (80). The trigger (100) is integral with a stopper tab (110) whose contact edge (111) engages the cam-lever edge (81) of the cam lever (80). This acts as a locking mechanism which must be released before the trigger can be moved. To release the lock, the user must press the safety button (120) by pushing on the safety button operation section (121). When the safety button (120) is depressed, the motion of the safety button (120) is translated to the cam lever (80) via the safety-button pin (83) as resistance is provided by the return spring (90) pressing against the projection (15).

Initially, the cam lever (80) moves, so that its cam-lever edge (81) is disengaged from the contact edge (111) of the stopper tab (110). In addition, the initial pressing of the safety button (120) will cause the fuel-release lever (70) to also move slightly. However, this movement will be insufficient to release an amount of fuel that is adequate for flame production.

With the locking mechanism disengaged, the user can now press the trigger (100) in order to create a spark. As the operation section (101) of the trigger (100) is pushed, the undersurface (102) of the trigger (100) contacts the contact surface (42) of the sliding section (41) of the piezoelectric unit (40). In this way, as the trigger (100) is activated, so is the piezoelectric unit (40), so that a spark is generated when the sliding section (41) has moved back far enough.

Without more, the operational procedure described above will only produce a spark. In order to produce a flame, the operator must continue to push the safety button (120), thereby further moving the cam lever (80). This, in turn, causes further rotation of the hub (61), which causes the fuel-release lever (70) to open the fuel-release valve (31) and release fuel. Now, with the safety button (120) held in this position, depression of the trigger (100) will allow a flame to be generated.

Once a flame has been generated, it can be sustained only if fuel continues to be supplied. As explained above, this will only occur if the safety button (120) is held in position and not released after a flame has been generated. Simply holding the trigger (100) in the activated state will not sustain the flame. That is, even though, after the lighter has been unlocked, depression of the trigger (100) might cause the upper surface (82) of the cam lever (80) to be held underneath the bottom surface of the stopper tab (110), the hub (61) of the cam mechanism (60) has not rotated enough at this point for the fuel-release lever (70) to be able to move and sufficiently open the fuel-release valve (31).

Once the flame is no longer needed, the safety button (120) is released. This allows both the cam lever (80) and the fuel-release lever (70) to return to their stationary positions under

the urging influence of return spring (90). Once in this position, the cam-lever edge (81) again engages the contact edge (111) of the stopper tab (110), thereby automatically re-locking the lighter. Finally, as the safety button (120) moves to its stationary position, it is stopped in that position when flanges (124) reach the inner portion of the top surface of the lighter housing shell.

I Claim:

1. A safety mechanism for a utility lighter, the utility lighter comprising a lighter housing, a lighting rod projecting from the lighter housing, a fuel tank, located within the lighter housing, for holding the fuel, a fuel-release valve being spring loaded so as to be urged into the closed position; a gas tube connected to the valve and extending through the lighting rod, and a conventional piezoelectric unit, said safety mechanism comprising:

a trigger for activating the piezoelectric unit to create a spark, the trigger being slidably mounted in the lighter housing and having a stopper tab;

a cam mechanism having an operable position, a locked position and a hub, the hub having three projecting members, the projecting members being a fuel-release lever, a cam lever, and a return spring, the fuel-release lever, engaging the fuel-release valve, for opening the fuel-release valve, the cam lever, aligned with the stopper tab, for impeding depression of the trigger, the return spring for urging the cam mechanism into the locked position, a cam support pin, projecting from the lighter housing, for mounting the hub;

a safety button having a first end and a second end, the first end protruding through the lighter housing and the second end adjoined to the cam mechanism, as the safety button is depressed the cam mechanism rotates, as the cam mechanism is

rotated the cam lever is moved so that the cam lever is not aligned with the stopper tab and the trigger can be depressed and the fuel-release lever is also moved opening the fuel-release valve, as the safety button is released the return spring urges the cam mechanism into the locked position.

2. The safety mechanism of claim 1, wherein the cam mechanism is comprised of a flexible material.

3. The safety mechanism of claim 1, wherein the second end of the safety button is attached to the cam lever.

4. The safety mechanism of claim 1, wherein the safety button further comprises flanges for limiting upward movement of the safety button.

5. The safety mechanism of claim 1, wherein the trigger is shaped to receive a finger.

6. A safety mechanism for a utility lighter, the utility lighter comprising a lighter housing, a lighting rod projecting

from the lighter housing, a fuel tank, located within the lighter housing, for holding the fuel, a fuel-release valve being spring loaded so as to be urged into the closed position; a gas tube connected to the valve and extending through the lighting rod, and a conventional piezoelectric unit, said safety mechanism comprising:

a trigger for activating the piezoelectric unit to create a spark, the trigger being slidably mounted in the lighter housing and having a stopper tab;

a hub mounted to the lighter housing;

a fuel-release lever having a first end and a second end, the first end being attached to the hub and the second end being engaged to the fuel-release valve, the fuel-release lever having an operable position and an inoperable position, while in the operable position the fuel-release lever activates the fuel-release valve releasing fuel, while in the inoperable position the fuel-release valve is closed and no fuel is released;

a cam lever having a first end and a second end, the first end being attached to the hub and the second end being adjacent to the stopper tab of the trigger, the cam lever having an operable position and a locked position, while the cam lever is in the operable position the trigger cannot be depressed because the cam lever is aligned with the stopper tab;

a return spring for urging the cam lever into the locked position and the fuel-release lever into the nonoperable position;

a safety button having a first end and a second end, the

first end protruding through the lighter housing and the second end adjoined to the cam lever, as the safety button is depressed the cam lever is depressed rotating the hub, as the hub is rotated the fuel-release lever activates the fuel-release valve, as the cam lever is moved the cam lever is not aligned with the stopper tab and the trigger can be depressed, as the safety button is released the return spring urges the cam mechanism into the locked position.

7. The safety mechanism of claim 6, wherein the cam mechanism is comprised of a flexible material.

8. The safety mechanism of claim 6, wherein the second end of the safety button is attached to the cam lever.

9. The safety mechanism of claim 6, wherein the safety button further comprises flanges for limiting upward movement of the safety button.

10. The safety mechanism of claim 6, wherein the trigger is shaped to receive a finger.

11. A safety mechanism for a utility lighter, the utility lighter comprising a lighter housing, a lighting rod projecting from the lighter housing, a fuel tank, located within the lighter housing, for holding the fuel, a fuel-release valve being spring loaded so as to be urged into the closed position; a gas tube connected to the valve and extending through the lighting rod, and a conventional piezoelectric unit, said safety mechanism comprising:

a spring mechanism having a nonoperational position, an operational position, a first portion and a second portion, the first portion locks the trigger when the spring mechanism is in the nonoperational position, the second portion opens the fuel-release valve when the spring mechanism is in the operational position, the spring mechanism being urged into the nonoperational position; and

a safety button for moving the spring mechanism from the nonoperational position to the operational position.

12. The safety mechanism of claim 11, wherein the spring mechanism is comprised of a flexible material.

13. The safety mechanism of claim 11, wherein the safety button is attached to the first portion of the spring mechanism.

14. The safety mechanism of claim 11, wherein the safety button further comprises flanges for limiting upward movement of the safety button.

15. The safety mechanism of claim 11, wherein the trigger is shaped to receive a finger.

ABSTRACT

A safety mechanism of a utility lighter. The safety mechanism includes a cam mechanism and a safety button. The cam mechanism has three projecting members, namely, a fuel-release lever, a cam lever, and a return spring. The fuel-release lever, when activated, opens the fuel-release valve. The cam lever, when in the locked position is aligned with the stopper tab, impedes operation of the trigger. The return spring urges the cam lever into the locked position and the fuel-release lever into the closed position. The cam mechanism is operated by a safety button, as the safety button is depressed the cam mechanism rotates. Rotating the cam mechanism moves the cam lever out of alignment from the stopper tab. Thus allowing the trigger to be depressed and the fuel-release lever is also moved opening the fuel-release valve, as the safety button is released the return spring urges the cam mechanism into the locked position.

DECLARATION FOR PATENT APPLICATION
SOLE INVENTOR AND POWER OF ATTORNEY

As the below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name; I believe that I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled

CHILD-RESISTANT UTILITY LIGHTER

the specification of which is attached hereto. I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims. I acknowledge the duty to disclose information which is material to the examination of the application in accordance with Titled 37, Code of Federal Regulations, § 1.56(a).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements and the like so made are punishable by fine or imprisonment, or both, pursuant to 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: I hereby appoint as my attorney, with full powers of substitution and revocation, to prosecute this application and transact all business in the United States Patent and Trademark Office connected therewith:

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